



State of Nevada
Division of Environmental Protection

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RADON CANISTER

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1.0 SCOPE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to describe a procedure for sampling of radon and radon decay product measurements found in homes. This method is based on samples collected in pre-packaged kits. Nevada Health Division (NHD) has purchased the kits to perform the lab test and provide the results for this study. Nevada Division of Environmental Protection (NDEP) will place the kit at the home, collect the kits, and mail it to the lab.

2.0 METHOD SUMMARY

The method is based on the sample collected in a test period of 48 to 96 hours (2 to 4 days) in a room where the canister will not be disturbed and away from drafts, an open door, windows, fireplace, (about 3 feet distance), etc. Preferably in a basement or the lowest level of the home (for multi-level homes), and 1 foot away from the exterior walls of the home but not in the kitchen, laundry room, cupboard, closet or bathrooms. The canister should be placed at a height of two (2) feet or above the floor and the space chosen should have remained closed for 12 hours previous to the test period (normal entry and exit is OK).

The kit should be stored in a cool dry place, remain in the box it comes in until the time of use and then returned to that same box. Radon and radon decay products long-term exposure rates recommended by EPA and the Surgeon General is 4 pico Currie intensity per liter (pCi/L) or below. The average indoor rate is 1.3 pCi/L and the outdoor is 0.4 pCi/L. Nevada is in a region of the U.S. where 9% of the housing units may exceed 4 pCi/L. This is a naturally occurring product where only a sample can determine the radon or radon decay products exposure rates for a particular site.

3.0 SAMPLE PRESERVATION, CONTAINERS HANDLING, AND SHIPPING

After the radon sample is collected, the container lid is replaced and resealed with the gray vinyl tape. Make sure the tape tightly seals the lid to the can in the same fashion as when it was removed. Record the date and time on the information card and the FIELD data sheet (Appendix A). Mail to laboratory. Information card and canister must be mailed within 24 hours. Results are returned to the NDEP and the Nevada Division of Health for consolidation of all sample results. Results will be included in the environmental sampling results packet to the homeowner.



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4.0 INTERFERENCES AND POTENTIAL PROBLEMS

Invalidation may occur in the sampling system if canister is punctured, not properly placed, over exposed to outdoor air supply, over exposed in the open mode (over 96 hours) or not delivered to the laboratory in a timely manner. Use of internal/external air exchange systems (other than the furnace) such as high volume attic and window fans (Swamp coolers) should not be operated for at least 12 hours prior to and during the measurement period. Any circulation system that brings outdoor air into the home should not be utilized.

5.0 EQUIPMENT/MATERIALS REQUIRED

The radon sample kit is provided by the Nevada Health Division.

6.0 PROCEDURE

6.1 Radon and radon decay products sampling:

- 6.1.1 A radon kit, is placed in an appropriate site of the control home (on a hard surface, at 2 feet or higher above the floor, not in a kitchen, bathroom, laundry room, closet, drawer, cupboard, and not near the fireplace, a window, nor a place with noticeable drafts). This test should **not** be run during severe weather conditions (i.e. blizzards, hurricane, and high winds). The canister should be exposed to the air people breathe.
- 6.1.2 Remove the vinyl tape from the can and remove the lid. Put the lid on the bottom of the can and replace the tape around the can. Do not allow the tape to twist or pick up any foreign material.
- 6.1.3 Place the can on a hard surface with the **open side up** in the selected location (it should not be moved). Record the date and time (include AM or PM) on the information form and FIELD data sheet.
- 6.1.4 After 48 hours (2 days) but no more than 96 hours (4 days), pick up the unit, reseal the canister and replace the vinyl tape around the seam of the canister. If the vinyl tape is lost, use electrical tape to seal the canister (the canister must be sealed or it cannot be analyzed). Record the date and time (include AM or PM) on the information form and FIELD data sheet.
- 6.1.5 Record on the information form and the FIELD data sheet the **type of room** where the canister was exposed (e.g. basement, living room, bed room, etc.).
- 6.1.6 Record on the information form and the FIELD data sheet **the level** of the home where the canister was exposed (e.g. basement, 1st, 2nd, etc.).



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- 6.1.7 Mail the kit and the information form (place the **yellow** copy in the box the kit came in, keep white copy for NDEP and NHD), tape the mailing box closed (use clear tape over the label address and add the NDEP phone number 775-687-4670 at the bottom).
- 6.1.8 Place in pre-paid postage box with addresses and mail the canister within one day.

7.0 QUALITY ASSURANCE/QUALITY CONTROL

- 7.1 All data must be documented on standard chain of custody records, FIELD data sheet, or site logbooks.
- 7.2 All kits must be placed and collected in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan. The radon sample kit should be intact when placed in the home, when picked up and must have documentation completed by the agent of the NDEP.
- 7.3 Duplicate samples will be taken as 1 in 10 samples. Two (2) canisters will be set side by side at the selected site and returned as specified in Section 6.0 above.
- 7.4 Blank samples or "unopened canisters" (sample not taken) will be returned as 1 in 20 samples.

8.0 HEALTH AND SAFETY

Health and Safety procedures as described and defined in the NDEP Health and Safety Plan (HASP) must be observed and implemented prior to dust sample collection. Chemical exposures are not anticipated, and physical or mechanical hazards are only those that would be found in any typical household environment.

9.0 REFERENCES

- 1. Radon Kit instructions.
- 2. U.S. Census, 1990.
- 3. U.S.G.S. survey on distribution of radon in Nevada.
- 4. Health and Safety Plan, *Prepared in Support of: CDC/NCEH Cross-sectional Exposure Assessment Study – Churchill County, Nevada.* September 25, 2001.



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FIELD Data Sheet – Appendix A

Site:	Date:	Samplers:
Sample #		
Location:		
Radon Kit ID:		
Method: Grab		
Time (incl. AM/PM)		
Is kit at 2 ft height or above? (y/n)		
Is it exposed to drafts? (y/n)		
Was canister kit moved? (y/n, Post opening)		
Sketch/ General Comments:		